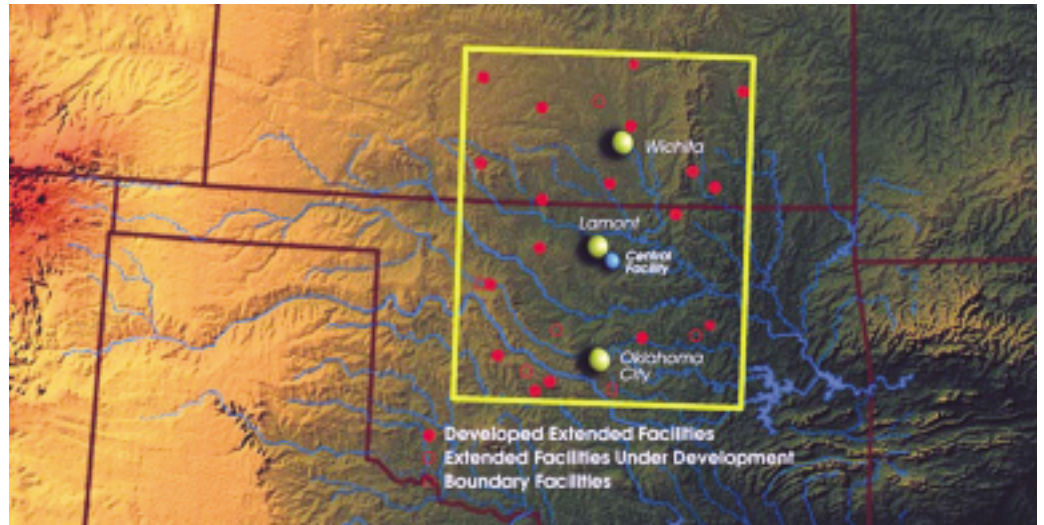


U.S. Department of Energy

U.S. Southern Great Plains



The U.S. Southern Great Plains (SGP) was the first field measurement site established by the U.S. Department of Energy (DOE) Atmospheric Radiation Measurement (ARM) Program. Establishment of this site began the data flow for a research effort designed to improve the performance of the atmospheric global climate models used for climate research by dramatically improving the representation of radiative and cloud processes in these large numerical models.

Within 24 months of the approval of the program, deployment of the first instrumentation to the SGP site occurred in the spring of 1992, and the site was dedicated in November 1992. Additional instrumentation and data processing capabilities were added in the succeeding years, culminating with the deployment of the new cloud radar in 1996.

The SGP was chosen as the first ARM field measurement site for several reasons:

- a relatively homogeneous geography and easy accessibility
- a wide variability of climate cloud type and surface flux properties
- a large seasonal variation in temperature and specific humidity
- an already large, existing network of weather and climate research instrumentation
- the best opportunity for synergistic/cooperative activity with many other federal and state climate research programs.



The SGP field measurement site is a series of in situ and remote-sensing instrument clusters arrayed across approximately 143,000 square kilometers (55,000 square miles) of north-central Oklahoma and south-central Kansas. The site is similar in size to a grid cell in a global climate model. The ARM SGP site is the largest and most extensive climate research field site in the world and can be viewed as a real "laboratory-without-walls."

The heart of the SGP site is the heavily instrumented Central Facility located on 160 acres of cattle pasture and wheat field southeast of Lamont, Oklahoma. A staff of 30 scientists and technicians collect and monitor data from the Central Facility instruments and from smaller, unmanned facilities throughout the site.

The instruments throughout the 55,000-square-mile site automatically collect data on surface and atmospheric properties, routinely providing data to the Site Data System, which is linked by high-speed communications to the ARM Archive and Data Center. The Data Center acquires additional data from other



915 MHz Profiler/Rass at SGP Central Facility

sources, such as National Weather Service satellite and surface data, and provides tailored data packages to ARM Science Team members.

The SGP site is one of three primary field sites in the ARM Program's

effort to improve cloud and radiative models and parameterizations, and thereby the performance of global climate models. The other two sites are located in the Tropical Western Pacific and the North Slope of Alaska.

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